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BECHUANALAND PROTECTORATE

ANNUAL MEDICAL AND SANITARY REPORT.

1949.

SECTION I - ADMINISTRATION.

Staff:

Dr. M.L.Freedman was appointed Director of Medical Services with effect from the 6th. June, 1949 on the transfer of Dr. D.J.M.MacKenzie, O.B.E. to Nyasaland as Director of Medical Services. Dr. Freedman was on overseas leave from May to November, during which period Dr. B.T.Squires acted as Director of Medical Services.

2. It is a pleasure to pay tribute to the services of Dr. MacKenzie who first joined the Service on 30th. July, 1934, and was appointed Director of Medical Services on 11th. January, 1944.

3. The approved establishment of medical officers during 1949 was the Director and eleven doctors, but for the greater part of the year the establishment was four short. Some vacancies were filled by locums for short periods, but this proved highly unsatisfactory in most cases.

4. Five medical officers left during the year, including the Medical Officer of Health and one whose three-year period of contract had expired. One new appointment, again on a three-year contract basis (on account of age), was made.

5. The part-time Government Medical Officer in the Chobe district who left in November 1948, was not replaced during 1949 by the Chobe Timber Concessions, by which firm, he was originally employed.

6. Owing to the fact that for the greater portion of the year there was only one medical officer in N'gamiland, very few district visits could be made.

7. During the latter part of the year the dispensary at Tsau was re-opened in charge of an African Health Assistant whose work was supervised from Maun.

8. The health assistant posted at Shakawe in the north-western area of N'gamiland continued to do good work, not the least of which was the ability to maintain continuity of venereal disease treatment.

9. For a portion of the year regular visits were paid to some of the Kalahari stations in the Bechuanaland Protectorate by arrangement with the lady doctor attached to the St. Michael's Mission Hospital near Kuruman. Unfortunately these visits had to cease when the doctor left Kuruman and was not replaced. The possibility of posting an African health assistant to the Kalahari is under consideration as no Government medical officer can be spared for duty there.

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10. One of the three health inspectors resigned during the year, and for reasons of economy has not been replaced. His post has now been removed from Estimates. This means that the health inspector now stationed at Francistown has to cope with the area Mafeking - Ramaquabane, including the Tuli Block and Nata areas, while the health inspector at Maun is responsible for the N'gamiland, Chobe and Kalahari districts. Each health inspector has, of course, a small number of African sanitary staff working under his supervision, but this reduction in staff puts a heavy strain on the health staff. Distances are great and much time is spent in travelling.

11. The post of Medical Officer of Health has now been abolished for reasons of economy, and it now falls upon the Director of Medical Services to direct and supervise all public health matters in addition to his other duties. The importance of preventive medicine and the necessity for establishing it on a satisfactory basis has been represented to higher authority and is no doubt receiving consideration.

European Nursing Staff.

12. Four new appointments were made, mainly to vacancies created during the previous year. One matron and one sister resigned.

African Staff.

13. Considerable difficulty is encountered in obtaining doubly certificated staff nurses. At the time of writing this report, there were six vacancies out of a total complement of seven.

Honours.

14. Sister V.Taylor, in charge of the London Missionary Society Maternity Centre at Maun since 1935, was awarded the M.B.E. in the King's Birthday Honours List.

Retirement.

15. It is apt to place on record an appreciation of the sterling service rendered to the territory by Dr. P.M. Shepherd, O.B.E., who retired on April 4th. 1949 from his post as Superintending Medical Missionary of the United Free Church of Scotland Hospital at Molepolole after 18 years' service. This hospital is an outstanding example of the high standard of achievement Dr. Shepherd set and attained. In addition to his medical and missionary duties, Dr. Shepherd was a member of the Bechuanaland Protectorate Executive Nursing Committee, and took a very active part in education and youth training in the Bakwena Reserve.

LEGISLATION

16. The following legislation was enacted:-

(a) High Commissioner's Notice No. 170 of 1949 amends Proclamation No. 116 of 1934 by the addition of an area in the Khale district to which the Proclamation is applicable.

(b) / 3

(b) High Commissioner's Notice No. 218 of 1949 amends High Commissioner's Notice No. 54 of 1930 and lays down a charge for the hire of Government ambulances in the territory.

(c) Proclamation No. 38 of 1949 amends the Workman's Compensation Proclamation No. 28 of 1936 and makes provision for medical aid, medical expenses and medical treatment for employees.

SECTION II - PUBLIC HEALTH.

17. The departure of the Medical Officer of Health has held up the proposed new public health legislation which is, however, in draft form. New legislation in connection with yellow fever is also under consideration.

18. Deficiency diseases were frequently reported and appeared to be even more prevalent than in the past. A large number of cases of scurvy was seen and many showed evidence of Vitamin A deficiency and ariboflavinosis. Vitamin C deficiency was mainly seen in the elderly or in young children, and was very often associated with gross pyorrhoea and sometimes with oedema of the legs. "Painful legs", due no doubt to subperiosteal haemorrhages in scorbutic patients, was an exceedingly common complaint. Some cases showed severe hypochromic anaemia, but no mycrocytic anaemias were encountered.

COMMUNICABLE DISEASES.

Plague.

19. In June several deaths in the Tshabong area of the Kalahari Desert were reported. Two cases of bubonic plague were seen by the anti-plague team sent to deal with the situation, but it appeared from reports that altogether six deaths had occurred, of which five had occurred on the Bechuanaland Protectorate side of the border. Almost simultaneously the Union Health authorities reported deaths from plague along the Union side of the Molopo River, a few miles from the site where the other deaths had occurred. Heavy rodent mortality on both sides of the border was also reported.

20. Preventive measures were immediately adopted, and active co-operation with the Union Department of Health, on both sides of the border, was instituted. Subsequently, further suspicious deaths were reported from the Kang and Bokspits districts, but no actual cases were seen and the diagnosis could not be substantiated.

21. The survey of the Tshabong - Molopo River - Kuruman River areas disclosed widespread mortality amongst veld rodents, particularly Desmodillus (Namaqua gerbil), Parotomys (Karroo rat), Tatera (common gerbil) and to a lesser extent, Pedetes (Springhare) in the immediate vicinity of Tshabong, southwards to the Molopo and westwards along the valley to Gakhibane. Similar conditions were observed between Middel-Pits and van Zylsrust and westwards for about 40 miles along the Kuruman River. At this point, Desmodillus, at the time of the survey, were extremely abundant and active just south of the river, but were beginning to die

from / 4

from what later was proved to be plague. Similar conditions applied generally both north and south of the Kuruman River. It was estimated that the epizootic had occurred two months or more before the survey.

22. Towards the end of the year fatal cases of plague were reported from the Gobabis district of South West Africa, close to our border. At the special request of the South West African Administration, a health inspector and a rodent inspector were sent from Maun to assist with the survey which also revealed signs of rodent mortality on the Bechuanaland Protectorate side, fortunately unaccompanied by human cases.

Smallpox.

23. During the year several outbreaks of smallpox with varying mortality rates were reported, mainly from the Ngwaketsi, Bakgatla and Bakwena reserves. Towards the latter part of the year 27 cases with 11 deaths occurred in the Gaberones district. This outbreak could be traced to one unvaccinated child.

24. Public indifference and failure to report the outbreak of disease are amongst the chief factors in causing the spread. Despite extensive propaganda to overcome this attitude, no success has been achieved.

25. As many cases are not reported at all, the figures recorded cannot be a true reflection of the actual number of cases, but only of those seen by medical officers.

26. 118,718 vaccinations were done, exclusive of those done at native labour recruiting centres.

27. Towards the end of the year a meeting was held with representatives of the Union Health Department to devise means of reducing the number of unvaccinated Africans passing between the Union and the Bechuanaland Protectorate. It was decided that all Africans applying for a pass to go to the Union will first have to undergo vaccination before such a pass is issued. The Union undertook to introduce a similar measure for Africans coming from the Union to the Bechuanaland Protectorate.

28. Vaccination is already being done in respect of labourers recruited for the Rand mines and the same procedure would be introduced for all other agencies recruiting labour for the Union in the Bechuanaland Protectorate. Arrangements were concluded to put this into immediate effect.

Rabies.

29. An outbreak of rabies was confirmed in the Maun area in July, and in August further cases were reported from Rakops and still later from Lothlakane, further south. Serowe and the more densely populated area adjoining the railway line were threatened, but as a result of intensive measures on the part of the Veterinary Department, this danger was averted.

30. No confirmed human cases were encountered, but a number of people in the affected areas, who had been bitten by suspected rabid animals, were treated prophylactically. None of these developed rabies. About 725 stray dogs

which / 5

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which had contacted suspected cases were destroyed by cattle guards and police patrols.

31. At the time of writing the situation was considered well under control, though quarantine restrictions and vigilance were still being maintained.

Malaria.

32. 1,856 cases, with 15 deaths, were treated at hospitals and dispensaries, practically all being malignant tertian infections. The centres of population in the endemic areas are protected by mosquito control measures which have reduced the incidence enormously.

33. A virulent outbreak of malaria occurred during the early part of the year in two villages in the Mahalapye district, resulting in 30 deaths. In each village the death rate from this cause was 14 per 1,000 of population. In early May a similar virulent outbreak occurred in the Mochudi district, resulting in 15 deaths.

34. From the epidemiological point of view it was considered that these were new infections introduced into non-immune populations. It was unlikely that A.gambiae, which was the culprit, had been recently introduced. The conditions are ideal for the breeding of this mosquito and it must have been established there for a long time. It was concluded, therefore, that the infection was introduced by a parasite carrier, who infected the mosquito vector, and so introduced the disease into a non-immune population.

35. A mosquito survey was carried out, followed by extensive anti-larval and anti-adult measures and the wide distribution of anti-malarial drugs. These precautionary measures were again taken at the commencement of the following malaria season in November. Hitherto (five months later) no further cases have been reported from these districts despite ideal climatic conditions.

36. Arrangements were also made for the sale of quinine and other anti-malarial drugs by members of the Police Force in areas not closely served by a hospital or dispensary.

Yellow Fever.

37. During June and July, Drs. J.H.S.Gear and B. de Meillon and Mr. Hodgson of the South African Institute for Medical Research and Mr. D.H.S.Davis of the Union Health Department, visited N'gamiland and the Chobe area to carry out a yellow fever survey. One Government medical officer, one health inspector and one rodent inspector were attached to the party, the medical officer being responsible for all the arrangements connected with the survey and assisting in the collection of specimens. One technician from the Northern Rhodesian Medical Department was attached to the party in order to gain experience of the type of work.

38. Dr. de Meillon and Mr. Davis were concerned with the entomological and ecological aspects of the yellow fever epidemiology.

39. About 600 specimens of human serum were obtained for the mouse protection tests. In addition a number of samples of monkey serum was collected.

40. / 6

40. The survey party traversed the route: Maun - Tsau - Nokaneng - Gomare - Shakawe - Ikwaga - Seronga and later some of the party also surveyed the Chobe district, collecting specimens of sera, both human and monkey, and mosquitoes, at Kachikau, Kavimba, Serondellas and Kasane.

41. The objects of the survey were mainly threefold:-

(a) To confirm the previous findings of positive mouse protection tests in humans in the N'gamiland and Chobe districts,

(b) To ascertain if the monkeys in N'gamiland and the Chobe areas give positive mouse protection tests, and

(c) To discover if yellow fever carrying mosquitoes exist in these areas during the winter months, and if so, to classify them.

42. At the time of writing, only the entomological report has come to hand and is attached to this report as Annexure "A".

43. Dr. de Meillon had already confirmed the presence of yellow fever mosquito vectors in the summer in these areas in his report on "Entomological Aspects of Yellow Fever in Northern Bechuanaland - 1946".

Tuberculosis.

44. During 1949, 932 cases of tuberculosis of all types were reported by doctors in the territory, as compared with 618 in 1948. This, of course, is not a true reflection of the actual number of cases as many are concealed.

45. With money from the Colonial Development and Welfare Fund and with the co-operation of Dr. B.A.Dormer, Chief Tuberculosis Officer of the Union of South Africa Department of Public Health, it is proposed to carry out a tuberculosis survey of the more densely populated centres. His department has undertaken to lend a travelling miniature x-ray plant and technical personnel. It is hoped that this survey will take place during 1950. For this purpose a preliminary survey of some of the areas to be visited was made by Dr. Dormer who was accompanied by a Government medical officer. Tentative plans were drawn up.

46. While on leave the Director of Medical Services attended the second Commonwealth and Empire Health and Tuberculosis Conference in London during July.

Trypanosomiasis.

47. 35 cases were reported, mainly personnel concerned with tsetse fly control operations. The Tsetse Fly Control Officer was himself a victim, but fortunately made a good recovery. Drought conditions during the year kept the game on the move continually, with the result that considerable damage was done to the game fence. Bush clearing along the fence was completed from Xoo to the Boro River during the latter part of the year.

48. During the year the following game was destroyed by the Tsetse Fly Control staff:-

Buffalo / 7

Buffalo	217	Kudu	233	Duiker	179
Wildebeeste	117	Warthog	713	Steenbuck	199
Impala	89	Lecwe	42	Badger	8
Reedbuck	98	Tsessebe	87	Various	131

Other Infectious Diseases.

49. 451 cases of measles, 1,238 of whooping cough, 27 of scarlet fever, 11 of diphtheria, 12 of mumps and 42 cases of chickenpox were treated. Most of these were mild, there being only three deaths. 1,211 cases were diagnosed as influenza, but only exceptionally was the condition complicated by pneumonia. There was one death.

Venereal Diseases.

50. There is nothing new to report save the introduction, as far as is practicable, of the "one shot" treatment of gonorrhoea with penicillin in oil. The possibility of masking cases of syphilis has not been lost sight of.

SECTION III - VITAL STATISTICS.

51. No vital statistics in respect of Africans are available. The European statistics are:-

Total European population	2,490
Total European births	67
Total European deaths	20
Birth rate per 1,000	26.90
Death rate per 1,000	8.03
Infant mortality	2 deaths.

Table shewing causes of deaths.

Tuberculosis	1
Cancer	2
Heart Disease	10
Cerebral malaria	1
Convulsions	1
Leukaemia	1
Bronchitis & Asthma	1
Suicide by gun shot	1
Fracture of skull	1
Pneumonia	1

Illness of Officials.

52. Of a total number of 273 European officials in the Service, 24 were granted more than two weeks' sick leave during the year, for the following reasons:-

Malaria	1
Simple Breast Tumour	1
Appendicitis	4
Tick bite fever	6
Influenza	2
Pneumonia	1
Pleurisy	1
Coronary thrombosis	1
Measles	1
Trypanosomiasis	1
Neurosis	1
Allergic Rhinitis	1
Nerve in scar tissue	1
Gout	1
Sacro Iliac strain	1

There were no deaths.

Of a total number of 1,117 African officials, other than casual labourers, 16 received more than two weeks' sick leave, for the following reasons:-

Hypertension	2
Fractures	1
Chronic Bronchitis	2
Measles	1
Septic finger	2
Pneumonia	2
Myocarditis	1
Urethritis	1
Enteritis	1
Ophthalmitis	1
Defective vision	1
Tuberculosis	1

There was one death due to myocarditis.

SECTION IV - HYGIENE & SANITATION.

Buildings.

53. Ten new Government houses for Europeans were completed during 1949, and also quarters for 35 African officials. The cost in the territory of the senior type European house is estimated to be £2,325, the junior type European house £2,110 and African houses £225 per unit.

54. At Maun Hospital a new male ward for Africans and necessary adjuncts were completed with funds provided by Colonial Development and Welfare funds and a grant of £2,000 from the Witwatersrand Native Labour Association. A start was also made with the installation of new electric light and water plants.

55. At Lobatsi Hospital two new wards and a new kitchen block were commenced. At Francistown Hospital extensions to the out-patient dispensary were begun and a new annexe for the Matron.

56. It is hoped soon to instal new electric light plants, hot water systems and Esse Cookers at Lobatsi and Serowe hospitals, and to build a new maternity block for Africans at Serowe for which purposes funds are available.

57. At Francistown Hospital a new x-ray plant was installed. All four Government hospitals are now equipped with x-ray facilities.

58. The Housing Committee, of which the Director of Medical Services is a member, met twice during the year.

Medical Inspection of schools.

59. It had been hoped to commence the regular medical inspection of schools, but this was not possible owing to staff difficulties. It is expected that this important aspect of preventive medicine will start shortly.

Prisons & Asylums.

60. Prisons are inspected weekly by the Medical

Officer on the station and by the Director of Medical Services whenever an opportunity offers. The health of prisoners has been good. One female prisoner was released on account of nephritis, one hard labour prisoner died from lobar pneumonia and one prisoner awaiting trial died from miliary tuberculosis. Improvements were effected at the Molepolole gaol and are contemplated at Maun.

61. Additional accommodation for four to six patients is being provided at the Lobatsi Mental Home, but this will still not serve the Protectorate's requirements. The Mental Home can now accommodate 12 - 14 patients. It is utterly impossible to obtain admission for mental patients to the mental institutions of neighbouring territories. Resort to the detention of dangerous lunatics in gaols often becomes necessary.

SECTION V - HOSPITALS & DISPENSARIES.

62. There has been a slight drop in the number of out-patients seen during 1949 as compared with that of the previous year. This is ascribed to the absence of a doctor in the Chobe area throughout the year, and the prolonged periods during which both Gaberones and Mahalapye were without medical officers. In-patient figures, however, continue to increase.

Out-patients	1948	1949
First attendances	65,840	80,180
Subsequent attendances	270,683	247,028
	336,523	327,208
In-patients	6,018	6,251

63. The London Missionary Society's hospital at Sefhare remained closed throughout the year. The fate of this hospital is not at present known. Meanwhile, the Medical Officer, Mahalapye, continues to visit this district and conducts an out-patients' clinic there at weekly intervals.

64. The question of the Chobe Timber Concessions Ltd. re-appointing a doctor at Serondellas is fraught with difficulties, but is being pursued.

65. Meanwhile, for the first time for many a day, the staff of doctors and sisters at the time of writing (April 1950) is stable and almost up to approved numbers. This happy position has only recently come about. The African nursing staff position, however, is still difficult, and new recruits are almost impossible to obtain from neighbouring territories.

Maternity & Child Welfare.

66. The tribal maternity centre at Serowe closed down during the year, the African sister in charge being transferred to assume general nursing duties at the Bamangwato College at Moeng. The teaching of midwifery

continued / 10

continued to be concentrated at Serowe. The erection of new maternity units at Serowe and Lobatsi, for which financial provision has been made, will greatly improve the facilities provided, and allow the teaching to be conducted under better conditions.

Nurse training.

67. The High Commission Territories Nursing Council met twice during the year, and amongst other things discussed the registration of nurses serving in the High Commission Territories; the recognition of training centres; the issue of registration certificates, badges and epaulettes and the curricula for the training of nurses. The Bechuanaland Protectorate Nursing Executive Committee also met twice during the year and concerned itself mainly with the conduct and results of nursing examinations.

68. 32 candidates were entered for the examinations, 30 being successful. The results reflect great credit on those responsible for the teaching. Seven females and two males successfully completed the final examination in general medical and surgical nursing and four qualified as midwives.

69. No permanent sister-tutor has yet been appointed at Lobatsi. New curricula for the general nursing and for the midwifery courses have been drawn up and submitted to the High Commission Territories Nursing Council for approval.

Hospital Visiting Committees.

70. Two such committees are functioning, at Serowe and at Maun. While the former encountered difficulties owing to the unsettled political situation, the Maun committee did excellent work and were also instrumental in collecting funds for the provision of comforts for the African patients.

Sale of Medicines by Traders.

71. Under the regulations now in force, each trader has to submit through the District Commissioner, for approval by the Director of Medical Services, a list of medicines which he proposes to sell during the year. Such approved lists require to be endorsed on his licence. This often entails considerable investigation as the formulae of a host of proprietary medicines must be ascertained in order to exclude those containing scheduled poisons. The sale of other proprietary medicines is also sometimes forbidden on the grounds of claiming for them properties which these medicines cannot possibly have. Under these fall the large number of cancer, heart and appendicitis cures, etc.

KANYE NUTRITION EXPERIMENT - C.D.& W.F. SCHEME D. 318

72. The report by Dr. B.T. Squires of this Administration was published in May, 1949 by the School of African Studies of the University of Cape Town. Copies are available from the Bechuanaland Protectorate Government at a price of 10/-. A summary follows:-

73. In 1944, £7,923 was provided as a grant from Colonial Development and Welfare Funds for the purpose of this experiment. The cost of the scheme, including the printing of the report, was approximately £6,450, the saving being mainly due to certain items of capital equipment not being procurable. The experiment was begun in November,

1943, and terminated in November, 1945.

74. While the immediate purpose of the experiment was to determine what effect the supplementation of the diet of Kanye school-children by a daily vegetable stew would have on their nutritional status under normal climatic conditions, the existence of severe drought conditions during the latter part of the experiment made it possible to ascertain the effect of such climatic conditions on the nutritional status of (a) those receiving supplementary food factors (at Kanye), and (b) those in the control group (Molepolole), who received no addition to their diet.

75. The supplement consisted of the equivalent of 4 ozs. of mixed fresh vegetables and 1 oz. of legumes in half a pint of stew per child, daily, properly prepared and suitably cooked. The experiment was confined to children in the age group 7 - 13 years. During the second year a supplement of dried whole milk was added to the diet of some of the children.

76. The vegetables were grown on tribal land by tribal labour, but as local fresh milk was usually in very short supply, whole dried milk was imported in bulk from the Union. The vegetables were supplied throughout the duration of the experiment with the exception of a period of three weeks when climatic conditions interfered with the supply.

77. The control group at Molepolole was, at the outset, far better nourished than was the experimental group at Kanye. This is ascribed to the fact that the Bakwena lands and cattle posts are much nearer to Molepolole than are the Bangwaketse lands and cattle posts to Kanye. At the end of one year's feeding, however, the Kanye children had significantly exceeded the nutritional status of the Molepolole children.

78. During the second year, extreme drought prevailed throughout the territory and the experiment was therefore unavoidably altered into one to determine to what extent the supplementary feeding helped the Kanye children from descending into a state of severe dietary deficiency. What actually happened was that whereas the percentage of malnourished children amongst the control group rapidly rose during this period, the nutritional status of the experimental group remained more or less stationary.

79. The supplementary feeding is also considered to have played a vital role in improving the health of children suffering from chronic ailments of a sufficiently severe degree to preclude them from taking part in the experiment; and it was also found that the mean number of days lost by absenteeism resulting from minor ailments in the experimental group was only half that lost by the controls.

80. Malnutrition in the Bechuanaland Protectorate varies in different localities in direct proportion to the ready availability and variety of foodstuffs.

81. It has also been concluded that children who do not go to school are consistently better nourished than those attending school. This might be ascribed to the increased opportunity afforded the former group of supplementing their diet by protective foods.

82. It is not considered that the addition of milk to the vegetable stew supplement made any appreciable

difference either to the nutritional status or to the incidence of dental caries.

83. Every effort is being made to introduce the medical examination of school-children at an early date, but the hitherto unstable staff position has caused some delay. At the outset the larger centres will be dealt with, and so far as is possible, an attempt will be made to carry out three medical examinations during the course of the child's school career: (a) on entry, (b) at the termination of the first academic year and (c) at the termination of the school career.

84. Apart from the valuable statistical information such examinations would yield, it is hoped to spot the early manifestations of disease amongst school-children and thereby prevent much chronic ill-health and reduce absenteeism.

85. This examination will also reveal the nutritional status of children throughout the territory, and where this is found to be defective, to recommend action on the lines of the Kanye experiment. It has been estimated that the cost would not exceed 8/- per child per year of approximately 200 school days.

86. The problem of tuberculosis is an ever increasing one in this territory. It is known that states of malnutrition markedly increase the liability to tubercular infection, so that any improvement in the nutritional status will also tend to decrease the incidence of tuberculosis.

87. The whole subject is dependent upon effective propaganda amongst the Batswana, the availability of water supplies and the problem of finance, not necessarily in that order of importance.

88. Annexure I of the report, dealing with the dental survey carried out by Dr. Deverall, is a very valuable adjunct, and Dr. Deverall's assistance in this investigation is deeply appreciated.

89. The children comprising the investigation were examined at yearly intervals, in October 1943, 1944 and 1945. As in the main experiment, Kanye provided the experimental group and Molepolole the controls.

90. It was concluded that the Kanye group which received the supplementary diet showed evidence of decreased dental caries and a marked improvement in the condition of the soft tissues. The addition of milk to one Kanye group resulted in no appreciable difference.

91. The incidence of dental defects amongst the Batswana groups investigated was lower than in native groups of similar age investigated in Johannesburg and in the Eastern Transvaal.

FINANCE: / 13

FINANCE.

92.

Total revenue from Hospital and Dispensary fees		£4,422.19. 1
Total Ordinary Expenditure of the Medical Department		
(a) Personal Emoluments	£37,666. 3. -	
(b) Other charges	28,095. -. 1	
	£65,761. 3. 1	
Total ordinary revenue of the Bechuanaland Protectorate		£501,344. 4. 6
Proportion of ordinary medical expenditure to ordinary revenue of Protectorate		13.1%
Total ordinary expenditure of the Bechuanaland Protectorate		£575,683.11. -
Proportion of ordinary medical expenditure to ordinary expenditure of Protectorate		11.4%

The figures are for the financial year ended 31st. March, 1949, being the latest audited figures available.

93. In conclusion, it is my privilege to record the loyal and devoted duty of the staff of the Department, both European and African.

M.L.FREEDMAN

DIRECTOR OF MEDICAL SERVICES.

Mafeking,
29th. April, 1950.

APPENDIX "A"

RETURN OF DISEASES - OUTPATIENTS. FIRST ATTENDANCES.

FOR THE YEAR 1949

	DISEASES BY SYSTEMS OR GROUPS	MALE	FEMALE
1.	Epidemic, Endemic and Infectious Diseases	7,461	8,997
2.	General Diseases not mentioned above	3,173	4,801
3.	Affections of the Nervous System and Organs of the Senses	2,138	2,511
4.	Affections of the Circulatory System	572	654
5.	Affections of the Respiratory System	4,728	4,075
6.	Diseases of the Digestive System	5,979	9,263
7.	Diseases of the Genito-urinary System (non-venereal)	754	8,376
8.	Puerperal State	-	5,594
9.	Affections of the Skin and Cellular Tissues	2,057	2,333
10.	Diseases of Bones and Organs of Locomotion (other than Tuberculous)	595	621
11.	Malformations	7	3
12.	Diseases of Infancy	277	338
13.	Affections of Old Age	33	53
14.	Affections produced by External Causes	2,068	1,149
15.	Ill-defined Diseases	162	266
16.	Diseases, the total of which have not caused 10 deaths.	507	635
	TOTALS:	30,511	49,669

APPENDIX "B"

RETURN OF DISEASES AND DEATHS - INPATIENTS.

FOR THE YEAR 1949

	Remaining in Hospital 1948	Yearly Total		Total cases Treated	Remaining in Hospital 1949
		Admissions	Deaths		
1. Epidemic, Endemic and Infectious Diseases	47	1164	70	1211	27
2. General Diseases not mentioned above	11	218	18	229	15
3. Affections of the Nervous System and Organs of the Senses	7	258	10	265	7
4. Affections of the Circulatory System	1	125	23	126	3
5. Affections of the Respiratory System	7	711	24	718	11
6. Diseases of the Digestive System	10	483	13	493	8
7. Diseases of the Genito-urinary System (non-venereal)	10	463	7	473	15
8. Puerperal State	14	1078	12	1092	12
9. Affections of the Skin and Cellular Tissues	9	528	8	537	6
10. Diseases of Bones and Organs of Locomotion (other than Tuberculous)	8	96	-	104	3
11. Malformations	-	2	-	2	-
12. Diseases of Infancy	2	23	5	25	-
13. Affections of Old Age	-	4	3	4	-
14. Affections produced by external causes	38	636	29	674	38
15. Ill-defined Diseases	-	122	2	122	3
16. Diseases, the total of which have not caused ten deaths	4	172	1	176	2
TOTAL:	168	6,083	225	6,251	150

ANNEXURE "A"

YELLOW FEVER SURVEY - NGAMILAND AND CHOBE DISTRICTS.

JUNE 21ST. - JULY 14TH. 1949

I. THE MOSQUITOS

A survey of the mosquito fauna of N.Bechuanaland during summer has already been made (see my report on "Entomological Aspects of Yellow Fever in N.Bechuanaland 1946"). During that survey the following proved and suspected vectors of yellow fever were found. Stegomyia aegypti, Stegomyia simpsoni, Stegomyia vittatus, Stegomyia metallicus, Stegomyia luteocephalus, Culex fatigans, Mansonioides africanus, and Mansonioides uniformis. A winter survey of Barotseland, which adjoins N.Bechuanaland and which does not differ from it very much climatologically, was made by me during July - August 1946. (See my report Yellow Fever Investigations - Barotseland 1946). During this survey a short visit was paid to Kasane in the Chobe and conditions compared with those found by me during my survey of N. Bechuanaland (see above). In addition to these surveys Mr. G.G.Robinson, Entomologist, N.Rhodesian Government, has made a thorough winter and summer survey at Balovale (Medical Entomology - Second Annual Report - N.Rhodesian Health Department, 1945).

From all these surveys a large amount of data is now available and we are in a good position to discuss the mosquito position.

The present survey yielded the species listed below. They were collected by myself and other members of the Survey and mostly relate to species which are attracted to man. Because of the lack of time little effort could be made to collect other species.

List of Mosquitos Collected.

Adults.

PLACE	ANOPHELINES	CULICINES
Seronga	A.coustani var. ziemanni	Culex univittatus
	A. funestus	Culex theileri
		Culex ? antennatus
	A. distinctus	Mansonioides africanus
	A.squamosus	Mansonioides uniformis

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Ikoga	A.coustani s.caliginosus	Mansonioides africanus
	A.coustani v.ziemanni	
	A.distinctus	
	A.funestus	
	A.squamosus	
Gomare	A.coustani v.ziemanni	Culex univittatus
		Culex theileri
On road between Gomare and Shakawe	---	Mansonioides africanus
Shakawe	A.coustani s.caliginosus	---
	A.coustani v.ziemanni	
Chobe Rapids	---	Culex univittatus

Larvae.

Seronga	A.coustani series	Culex poecilipes
	A.squamosus	Aedomyia furfurea

It will be seen from the above list that the present survey has completely confirmed the other winter surveys mentioned before, namely, that there is a complete absence of species of the subgenus Stegomyia amongst which are to be found the most important known vectors of yellow fever. The results of these combined surveys make it clear that there must be a break in the possible transmission season of several months. This is to be expected since both N.Bechuanaland and Barotseland are areas of summer rainfall and winter drought. A few Stegomyia may survive the dry winter as adults, if they do so, they must be so rare as not to effect the position in any way. It is quite obvious that these Stegomyia survive in the dry winter in the egg stage. The eggs lie dormant in breeding places e.g. tree holes etc., until the summer rains fall when they hatch.

The mosquitos which are present in both summer and winter consist almost entirely of the zoophilic anophelines A. coustani series, A.distinctus, A.squamosus, a few Culicines and Mansonioides. Amongst the Culicines Culex univittatus bites man readily and so of course do the

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